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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/315,068 05/20/99 HAYAKAWA

T 054431

EXAMINER

MMC2/0213
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WASHINGTON DC 20037-3202

ART UNIT

PAPER NUMBER

2881
DATE MAILED:

02/13/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/315,068

Applicant(s)

HAYAKAWA ET AL.

Examiner

Jeffrey N Zahn

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 May 1999 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 5, 6.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 11-20 of Figure 2; and 21-31 of Figure 3. Correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fiddymment et al. in view of Milind and Erbert. Fiddymment discloses a semiconductor laser (abstract) that includes a quantum well layer (4), an upper waveguide layer (5), and a lower waveguide layer (3); the said quantum well layer, upper and lower optical waveguide layers are nominally of material composition $\text{Ga}_{.39}\text{In}_{.61}\text{As}_{.88}\text{P}_{.12}$, p doped $\text{Ga}_{.17}\text{In}_{.83}\text{As}_{.36}\text{P}_{.64}$ and n doped $\text{Ga}_{.17}\text{In}_{.83}\text{As}_{.36}\text{P}_{.64}$ respectively(col. 5, lines 31-45); an upper cladding layer (7) that is selectively removed, via etching, up to the interface of the upper cladding layer and the upper optical waveguide layer (col. 6, lines 58-60; see also Fig. 5)

Regarding Claim 1, Fiddymment lacks upper and lower cladding layers formed

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of AlGaAs and an optical waveguide layer equal or greater than .25 μm in thickness. Milind teaches the use of aluminum free InGaAsP Quantum Wells and waveguides to improve performance of high power lasers by decreasing the internal losses (abstract and Fig. 1) and confinement factor effect for the Quantum Well and the Cladding as a function of waveguide thickness of .2 μm to 1.2 μm (Fig. 3; see also page 2268, "Design of BW Lasers") Therefore it would have been obvious to someone of ordinary skill in the art of semiconductor lasers at the time of the invention to specify an optical waveguide thickness of at least .25 μm to maintain the laser gain for the fundamental mode , traverse mode or both modes depending on the specific waveguide thickness and desired performance.

Erbert teaches the structure of Al-Free QW's in AlGaAs waveguides (abstract; see also Fig 1.) in order to reduce degradation of lasers containing Aluminum in the active region. In addition, it is well known in the art of lasers that a lower cladding is used to further absorb unwanted emissions of the QW region and further confine the laser guided within the waveguide structure. Therefore it would have been obvious to someone of ordinary skill in the art of semiconductor lasers at the time of the invention to use AlGaAs as an upper and lower cladding layer to conform with conventional practice while making the QW free of Al to decrease the rate of laser degradation.


Regarding Claim 2, in addition to the discussion above relative to Claim1, Fiddymment et al. discloses a semiconductor laser that includes an upper cladding layer of a ridge type construction. (7")


Regarding Claim 3, in addition to the discussion above relative to Claim 1, all of the structural limitations of Claim 3 are also part of Claim 1. Forming the optical waveguide and forming the upper cladding layer are inherent to the prior art cited for Claim 1 because the device must be formed or made to become operable. Therefore, it would have been obvious to someone of ordinary skill in the art of semiconductor lasers at the time of the invention to form the optical waveguide and upper cladding layer to manufacture the laser as claimed in Claim 1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey N Zahn whose telephone number is 703-305-3443. The examiner can normally be reached on M-F: 8:30-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teresa M Arroyo can be reached on 703-308-4782. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Jeffrey Zahn
February 12, 2001


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